



Manual S Compliance Report

Entire House

Air Ducks Heating & Air, Inc.

Job:
Date: Dec 07, 2020
By:

2601 NW 76th Ave, Gainesville, Fla 32653 Phone: 352-215-4624 Email: Airducksac@gmail.com Web: Airducksac.com License: CAC1817288

Project Information

For: DWC Construction
Rolling Meadows lot 6, Fla

Cooling Equipment

Design Conditions

Outdoor design DB:	91.9°F	Sensible gain:	28035	Btuh	Entering coil DB:	78.0°F
Outdoor design WB:	76.2°F	Latent gain:	4835	Btuh	Entering coil WB:	63.9°F
Indoor design DB:	75.0°F	Total gain:	32870	Btuh		
Indoor RH:	50%	Estimated airflow:	1220	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Trane	Model:	4TWR4036G1+TEM3A0C36S41++TDR	
Actual airflow:	1220	cfm		
Sensible capacity:	29280	Btuh	104% of load	
Latent capacity:	7320	Btuh	151% of load	
Total capacity:	36600	Btuh	111% of load	SHR: 80%

Heating Equipment

Design Conditions

Outdoor design DB:	33.0°F	Heat loss:	33629	Btuh	Entering coil DB:	66.6°F
Indoor design DB:	68.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Trane	Model:	4TWR4036G1+TEM3A0C36S41++TDR	
Actual airflow:	1220	cfm		
Output capacity:	34200	Btuh	102% of load	Capacity balance: 33 °F
Supplemental heat required:	0	Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip			
Manufacturer:	n/a	Model:		
Actual airflow:	1220	cfm		
Output capacity:	6.6	kW	67% of load	Temp. rise: 25 °F

Meets all requirements of ACCA Manual S.



Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1
15 Mar 09

Header Information

Contractor:

Air Ducks Heating & Air, Inc.

Mechanical license:

CAC1817288

Building plan #:

Home address (Street or Lot#, Block, Subdivision):

Rolling Meadows lot 6, Entire House

REQUIRED ATTACHMENTS

Manual J1 Form (and supporting worksheets):
or MJ1AE Form* (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution sketch:

ATTACHED

Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature: 33 °F
Indoor temperature: 68 °F
Total heat loss: 33629 Btuh

Summer Design Conditions

Outdoor temperature: 92 °F
Indoor temperature: 75 °F
Grains difference: 47 gr/lb @50% RH
Sensible heat gain: 28932 Btuh
Latent heat gain: 4990 Btuh
Total heat gain: 33922 Btuh

Building Construction Information

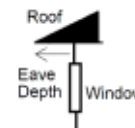
Building

Orientation: Front Door faces North
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms: 0
Conditioned floor area: 1843 ft²
Number of occupants: 5

Windows

Eave overhang depth: 0 ft
Internal shade: blinds
Blinds, drapes, etc.
Number of skylights: 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type: Split ASHP
Furnace, Heat pump, Boiler, etc.
Model: Trane
4TWR4036G1+TEM3A0C36S41++TDR
Heating output capacity: 0 Btuh
Heat pumps - capacity at winter design outdoor conditions
Aux. heating output capacity: 22460 Btuh

Cooling Equipment Data

Equipment type: Split ASHP
Air Conditioner, Heat pump, etc.
Model: Trane
4TWR4036G1+TEM3A0C36S41++TDR
Total cooling capacity: 0 Btuh
Sensible cooling capacity: 0 Btuh
Latent cooling capacity: 0 Btuh

Blower Data

Heating cfm: 1220
Cooling cfm: 1220
Static pressure: 0.50 in H₂O
Fan's rated external static pressure for design airflow

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow: 1220 cfm
Equipment design ESP: 0.50 in H₂O
Total device pressure losses: 0 in H₂O
Available static pressure (ASP): 0.50 in H₂O
Longest supply duct: 418 ft
Longest return duct: 97 ft
Total effective length (TEL): 515 ft
Friction rate: 0.097 in/100ft
Friction Rate = ASP ÷ (TEL × 100)
Duct Materials Used
Trunk duct: Fiberglass board
Branch duct: Round flex vinyl

I declare the load calculation, equipment, equipment selection and duct design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's printed name: _____

Contractor's signature: _____

Date: _____

Reserved for County, Town Municipality or Authority having jurisdiction use.

*Home qualifies for MJ1AE Form based on Abridged Edition Checklist



Load Short Form

Entire House

Air Ducks Heating & Air, Inc.

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Project Information

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Rolling Meadows lot 6, Fla

Design Information

	Htg	Clg	Infiltration	Simplified
Outside db (°F)	33	92	Method	Average
Inside db (°F)	68	75	Construction quality	0
Design TD (°F)	35	17	Fireplaces	
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	29	47		

HEATING EQUIPMENT

Make Trane
Trade TRANE
Model 4TWR4036G1
AHRI ref 10344969

Efficiency 8.5 HSPF

Heating input
Heating output 34200 Btuh @ 47°F
Temperature rise 26 °F
Actual air flow 1220 cfm
Air flow factor 0.036 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 33 °F

Backup: n/a

Input = 7 kW, Output = 22460 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Trane
Trade TRANE
Cond 4TWR4036G1
Coil TEM3A0C36S41++TDR
AHRI ref 10344969

Efficiency 11.5 EER, 14 SEER

Sensible cooling 29280 Btuh
Latent cooling 7320 Btuh
Total cooling 36600 Btuh
Actual air flow 1220 cfm
Air flow factor 0.044 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.85

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master	316	7873	6299	286	274
Wic 1	48	927	415	34	18
wc	40	58	100	2	4
Master bath	215	4005	2036	145	89
living	449	7161	8031	260	349
kitchen/dining	243	2168	3508	79	153
bed 2	156	4573	2161	166	94
bath	54	1346	1682	49	73
bed 3	168	2149	937	78	41
hall	18	0	0	0	0
wic	42	1751	1689	64	74
Pantry	42	0	0	0	0
laundry	70	1617	1176	59	51

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



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...ents\Wrightsoft HVAC\DWC lot 25 thorne wood.rup Calc = MJ8 Front Door faces: N

Entire House	d	1861	33629	28035	1220	1220
Other equip loads			0	0		
Equip. @ 0.97 RSM				27166		
Latent cooling				4835		
TOTALS		1861	33629	32001	1220	1220

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Project Summary

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Rolling Meadows lot 6, Fla

Notes:

Design Information

Weather: Gainesville Rgnl, FL, US

Winter Design Conditions

Outside db	33 °F
Inside db	68 °F
Design TD	35 °F

Summer Design Conditions

Outside db	92 °F
Inside db	75 °F
Design TD	17 °F
Daily range	M
Relative humidity	50 %
Moisture difference	47 gr/lb

Heating Summary

Structure	25863 Btuh
Ducts	7766 Btuh
Central vent (0 cfm) (none)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	33629 Btuh

Sensible Cooling Equipment Load Sizing

Structure	17962 Btuh
Ducts	10073 Btuh
Central vent (0 cfm) (none)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	27166 Btuh

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

Latent Cooling Equipment Load Sizing

Structure	2713 Btuh
Ducts	2122 Btuh
Central vent (0 cfm) (none)	0 Btuh
Equipment latent load	4835 Btuh

	Heating	Cooling
Area (ft ²)	1843	1843
Volume (ft ³)	16207	16207
Air changes/hour	0.38	0.20
Equiv. AVF (cfm)	103	54

Equipment Total Load (Sen+Lat)	32001 Btuh
Req. total capacity at 0.80 SHR	2.8 ton

Heating Equipment Summary

Make	Trane
Trade	TRANE
Model	4TWR4036G1
AHRI ref	10344969
Efficiency	8.5 HSPF
Heating input	
Heating output	34200 Btuh @ 47°F
Temperature rise	26 °F
Actual air flow	1220 cfm
Air flow factor	0.036 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	
Capacity balance point = 33 °F	
Backup: n/a	
Input = 7 kW, Output = 22460 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Trane
Trade	TRANE
Cond	4TWR4036G1
Coil	TEM3A0C36S41++TDR
AHRI ref	10344969
Efficiency	11.5 EER, 14 SEER
Sensible cooling	29280 Btuh
Latent cooling	7320 Btuh
Total cooling	36600 Btuh
Actual air flow	1220 cfm
Air flow factor	0.044 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.85

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



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Duct System Summary

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	Heating	Cooling
External static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Pressure losses	0 in H ₂ O	0 in H ₂ O
Available static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Supply / return available pressure	0.406 / 0.094 in H ₂ O	0.406 / 0.094 in H ₂ O
Lowest friction rate	0.097 in/100ft	0.097 in/100ft
Actual air flow	1220 cfm	1220 cfm
Total effective length (TEL)	515 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Master	h 3937	143	137	0.099	7.0	0x0	VIFx	45.2	365.0	st3
Master bath	h 4005	145	89	0.097	6.0	0x0	VIFx	48.4	370.0	st3
Master-A	h 3937	143	137	0.099	7.0	0x0	VIFx	54.9	355.0	st3
Wic 1	h 927	34	18	0.105	4.0	0x0	VIFx	51.0	335.0	st3
bath	c 1682	49	73	0.154	6.0	0x0	VIFx	28.0	235.0	st2
bed 2	h 4573	166	94	0.201	7.0	0x0	VIFx	31.8	170.0	st2
bed 3	h 2149	78	41	0.148	6.0	0x0	VIFx	19.0	255.0	st2
kitchen/dining	c 3508	79	153	0.153	8.0	0x0	VIFx	21.0	245.0	st2
laundry	h 1617	59	51	0.191	6.0	0x0	VIFx	8.0	205.0	st1
living	c 4015	130	175	0.135	7.0	0x0	VIFx	31.0	270.0	st3
living-A	c 4015	130	175	0.132	7.0	0x0	VIFx	37.0	270.0	st3
wc	c 100	2	4	0.104	4.0	0x0	VIFx	44.3	345.0	st3
wic	c 1689	64	74	0.184	4.0	0x0	VIFx	15.0	205.0	st1

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	1220	1220	0.097	732	15.7	8 x 30	RectFbg	
st3	Peak AVF	726	735	0.097	661	13.0	8 x 20	RectFbg	st1
st2	Peak AVF	371	361	0.148	668	9.3	8 x 10	RectFbg	st1



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Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb3	0x 0	200	165	70.2	0.134	573	8.0	0x 0		VIFx	
rb4	0x 0	313	187	90.0	0.105	898	8.0	0x 0		VIFx	
rb2	0x 0	257	401	74.8	0.126	287	16.0	0x 0		VIFx	
rb1	0x 0	449	467	97.0	0.097	595	12.0	0x 0		VIFx	